Sign language

Ling 001 – Fall 2016
Jami Fisher – Beatrice Santorini
Some myths about sign languages

- Sign languages are not human languages.
- Sign languages are just pictures in the air.
- Sign language is universal.
- Sign languages are manual encodings of the surrounding spoken language.
Sign languages are languages

- Brain studies provide incontrovertible evidence that sign languages are human languages.
- Like spoken language, sign language is processed by the linguistic (generally left) hemisphere
- As with spoken language, trauma to the linguistic hemisphere results in either Broca’s aphasia or Wernicke’s aphasia.
Brain activation for sign and speech (fMRI study by Sakai et al. 2005:1411)
Arbitrariness vs. iconicity

- In spoken language, the form of a word (its sound) is generally unrelated to properties of its referent.
- Based on spoken language, arbitrariness has been taken to be a fundamental design feature of human language (Hockett 1960).
- Words in sign languages tend to be more iconic than are words in spoken languages.
TREE - American Sign Language
TREE - Chinese Sign Language
TREE - Danish Sign Language
Limits of iconicity - Synchronic, 1

- The three signs for TREE evoke the physical shape of the referent (= iconic).
- But the shape is evoked in different ways (= arbitrary), and the sign is fixed (= conventional) for each language.
- Signers cannot decide to use a different sign – no matter how iconic.
- Conventionality trumps iconicity.
Limits of iconicity - Synchronous, 2

- Etymologically iconic signs become opaque to native signers.
  - JOT < PUT + PAPER
- This is comparable to English compounds that have lost their transparency.
  - always < all + ways (cf. dialectal ‘all roads’)
  - cupboard < cup + board
Limits of iconicity - Diachronic

- The origin of signs is often iconic.
- But once a sign becomes conventional, the basis of the association with its referent becomes purely formal.
- Iconicity goes from being in the driver’s seat to being a dispensable passenger.
Loss of iconicity

- As a result, a sign’s iconic properties are subject to erosion.

- HOME < EAT + BED
- SISTER < GIRL + SAME
- STUDENT < LEARN + agentive suffix
Universal sign language?

- Ethnologue lists 130 Deaf sign languages throughout the world
How do sign languages arise?

- Spontaneous emergence
  - Home sign
  - Village sign
- Some examples
  - Nicaraguan Sign Language
  - Al-Sayyid Bedouin Sign Language
  - Martha’s Vineyard Sign Language
- Language movement, contact, and evolution
  - Comparable to the emergence of pidgins and creoles
  - ASL is one example of this
ASL is not fingerspelled English!

- Sign languages are not manual encodings of the surrounding spoken language.
- ASL is not historically related to English.
- It is not historically related to British Sign Language.
- It is also not mutually intelligible with BSL.
ASL < LSF

- ASL is historically related to L(angue des) S(ignes) F(rançaise) (French Sign Language).
- It developed in the early 1800s from contact between LSF and early North American village sign systems.
- Notable among the latter is Martha’s Vineyard Sign Language (< Old Kentish Sign Language).
Sign language has phonology (!)

- *phon-* < Greek for voice
- How can languages that don’t use the voice have phonology?
Duality of patterning, 1

- All human languages have meaningful units (morphemes) that combine with one another to yield phrases and sentences.
- The part of a language’s grammar that governs the combination of meaningful units with one another is called the morphosyntax.
Duality of patterning, 2

- Individual morphemes can be broken down into meaningless units.
- The part of the grammar that governs the combination of the meaningless units among each other and into the meaningful units is called the phonology.
Duality of patterning, 3

- The bifurcation of grammar into syntax and phonology is a key design feature of human language.
- Hockett 1960 calls it duality of patterning.
- Duality of patterning is independent of a language’s modality (signed or spoken).
Duality of patterning, 4

- Both spoken and signed languages have meaningless units.
- The meaningless units in spoken language concern gestures made with the muscles of the vocal tract, resulting in acoustic signals.
- The meaningless units in signed language concern gestures made with other muscles (notably the arms and hands, but including others), resulting in visual signals.
Phonological minimal pairs in English

- b-ad, d-ad, f-ad, m-ad, ...
- b-a-d, b-e-d, b-i-d, b-u-d, ...
- ba-d, ba-g, ba-ck, ba-n, ...
- The words in each of these groups are not related by way of meaning.
- Rather, they are related by way of form; their relation is purely phonological.
Phonological minimal pairs in ASL

- ASL has phonological minimal pairs that are comparable to the ones for spoken languages.
- The minimal pairs provide evidence for linguistic properties that are independent of meaning – that is, for phonology and duality of patterning.
Phonological parameters of sign languages

- Handshape
- Location
- Movement
- Orientation
- Non-manual features
Handshape

- Position of fingers and thumbs and flexion / extension of relevant joints
- Minimal pairs show that handshape is part of a morpheme’s lexical entry (i.e., it must be memorized).
- CANDY vs. APPLE
Unmarked handshapes, 1
Unmarked handshapes, 2

- Perceptually most distinct and salient
- Universal across sign languages
- Used most frequently in each sign language
- Acquired earliest
- Phonologically less restricted
Marked handshapes

- 20+ in ASL
- Articulatorily and perceptually more complex
- Less common in and across sign languages
- Acquired later
- Phonologically more restricted
Handshape - Crosslinguistic variation

- Each sign language uses a limited number of possible handshapes.
- Handshapes may be grammatical in one sign language, but ungrammatical in another.
- Taiwan Sign Language signs for BROTHER and SISTER are ungrammatical handshapes in ASL.
Location

- Place of articulation relative to face, torso, or non-dominant hand or arm
- Again, minimal pairs show that location is part of a morpheme’s lexical entry
- SUMMER vs. UGLY vs. DRY
Movement, 1

- Primary movements
  - Straight vs. arc vs. hook (“7”)
  - Vertical vs. horizontal
  - Towards vs. away from the body
  - Unidirectional vs. bidirectional

- Secondary movements
  - Wiggling or hooking fingers
Movement, 2

- CHAIR vs. TRAIN
- CHURCH vs. CHOCOLATE
- Also, deverbal nominalizations:
  - SIT, CHAIR
Orientation

- Various parts of the hand (palm, fingertips) can be oriented differently.
  - Up or down
  - In or out
  - Ipsilateral (right hand faces right) or contralateral (right hand faces left). Analogously for left hand.
- SOCK vs. STAR, GAME vs. WITH
Non-manual gestures involve the head, eyebrows, mouth, position of body, etc.

- Independent of expression of affect!
- LATE vs. NOT-YET
Non-manuals, 2

- Gestures with whole head or lower face can indicate adverbial modification
  - Headshake ‘negation’
  - MM ‘as usual, with enjoyment’
  - TH ‘carelessly, sloppily’
  - Puff cheek = takes a long time
Non-manuals, 3

- Gestures involving eyebrows and angle of upper body are comparable to spoken-language intonation
  - Marks topics
  - Mark sentence type
    - Statement vs. yes-no question vs. wh-question
  - Distinguish true questions from question-answer pairs
A further source of evidence for sign phonology

- Deaf Broca’s aphasics produce partial errors resulting in nonsense words.
- The sign on the right has the correct location and movement for FINE, but the wrong handshape.
Questions?
Influences of surrounding language and culture

- Shared gestures
  ME = point to nose in Japan, point to chest in most other parts of the world
- Fingerspelling
- Mouthing
- Morpheme order
  25 generally twenty + five, but five + twenty in German Sign Language (cf. German fünfundzwanzig)
Types of signs (in the sense of Peirce)

- **Icon**
  Sign resembles referent in some respect

- **Index**
  Sign has some real-world connection to referent (other than resemblance)

- **Symbol**
  Sign has an arbitrary relation to referent
What about onomatopoeia?

- Onomatopoeia: acoustic iconicity
- Acoustic indexicality is exploited in naming brands.
- But onomatopoeia is not central to spoken languages.
Visual iconicity

- From a game-theoretic point of view, iconic forms are optimal candidates for signs (= Schelling points).
- Humans are a primarily visual species. Given the possibility of a visual language, it’s no wonder that such a species would exploit visual iconicity.
Arbitrariness revisited

- If arbitrariness is a central design feature of human language, and if sign languages are full of iconicity, then the status of sign languages as full-fledged human languages is always in danger.
- “Upplaying” the amount of iconicity in spoken languages is a weak defense.
Arbitrariness revisited, 2

- A stronger defense is to insist on the irreducibly conventional character of morphemes, independently of their iconicity.

- It is this conventionality that allows arbitrariness to emerge in sign languages as a result of factors including:
  - ease of production and perception
  - vocabulary “inertia”
  - increases in vocabulary size
A conjecture: A mode-specific limit on arbitrariness in sign languages

- If signs can develop to be as arbitrary as words in spoken language, upward points could in principle come to mean DOWN, and vice versa.
- We conjecture that such a development is impossible, and that the impossibility is a consequence of the Stroop effect.
An important point about pointing

- Pointing is a distinctively human ability.
- Non-human primates in the wild do not point (Robert Seyfarth, pers. comm., November 17, 2014).
- Chimpanzees in captivity look like they point, but they don’t.
- When put to the test, they fail spectacularly (Povinelli et al. 2003).